

**REMARKS**

Favorable reconsideration of this application is respectfully requested in light of the following remarks, wherein Claim 1 is amended. Currently, Claims 1-33 are pending in the present matter.

Claims 1-33 stand rejected under 35 U.S.C. §112, second paragraph, for containing an informality. As a result, independent Claim 1 is amended to remove this informality. Accordingly, withdrawal of the rejections based upon 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 1-6, 12, 18, 27 and 33 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,102,408 to *Ludvigson*. Claims 7-11 and 22-26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Ludvigson*, in view of U.S. Patent No. 7,032,684 to *Muuttonen*. Claims 15 and 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Ludvigson* in view of U.S. Patent No. 7,252,154 to *Keskiniva et al.*

Independent Claim 1 defines a pressure fluid operated impact device comprising a frame where to a tool is mountable movably in its longitudinal direction, control means for controlling pressure fluid feed by the impact device, and means for generating a stress pulse in the tool by the pressure of a pressure fluid, wherein the impact device comprises a working chamber entirely filled with pressure fluid and, in the working chamber, a transmission piston movably mounted in the longitudinal direction of the tool with respect to the frame, an end of the transmission piston facing the tool coming into contact with the tool either directly or indirectly at least during the generation of the stress pulse, the transmission piston, in its axial direction with respect to the tool on the opposite side thereof, being provided with a pressure surface located towards the

working chamber, the impact device comprises energy charging means for charging energy of the pressure fluid to be fed to the impact device necessary for generating the stress pulse, and in that the control means are configured to allow periodically and alternately a pressure fluid having a pressure higher than the pressure of the pressure fluid present in the working chamber to flow to the working chamber, thus causing a sudden increase in the pressure in the working chamber and, consequently, a force pushing the transmission piston in the direction of the tool, compressing the tool in the longitudinal direction and thus generating a stress pulse in the tool, the generation of the stress pulse ending substantially at the same time as the influence of the force on the tool ends, and, correspondingly, to discharge pressure fluid from the working chamber in order to enable the transmission piston to return to its substantially original position. None of the art of record discloses these patentable features.

*Ludvigson* discloses a gas cushion impact cap used in connection with pile driving, and not an impact device as claimed. In particular, *Ludvigson* discloses a hammer integral with an impact cap 10 for pile driving. The end of the pile 11 is hammered by the hammer. The impact cap 10 has a piston 13. As noted in column 3, lines 8-11 of *Ludvigson*, the chamber in cylinder 12, above piston 13, is filled with pressurized gas, and the piston is, in its most forward position, supported by an annular member 25 of resilient material. A stroke at the end of the pile causes the gas in chamber 12 to be compressed. The compressed gas again tries to push piston 13 towards the pile which increases a driving of the pile.

In *Ludvigson*, the hammer and the impact cap strikes against the end of the pile together with piston 13. Piston 13 is not in contact with the pile before the stroke and the impact is created only by the hit of the hammer and the impact cap with the piston against the pile. The

gas space behind piston 13 is only a damper which allows a smoother contact to the end of the pile and some longer pushing force to the end of the pile. The pressure behind piston 13 is not changed during the operation. The stress pulse to the pile is not created by setting piston 13 under the influence of pressure, but rather by hitting the pile with the hammer.

In contrast, according to the features of the claimed invention, the piston is directly or indirectly in contact with tool when a pressure pulse of pressure fluid is set to affect the piston. As such, the force created by the pressure pulse compresses the tool and thus creates a stress pulse in it. In *Ludvigson*, there is always a substantially same pressure behind the piston 13 and no pressure pulses.

In addition, independent Claim 1 recites an energy charging means for charging energy of the pressure fluid, from which the pressure fluid having high pressure is periodically allowed to affect the piston and alternately the pressure behind piston is allowed to be released. In *Ludvigson*, this kind of periodical pressurizing and depressurizing of the cylinder behind the piston does not happen.

As such, *Ludvigson* uses the hammer to strike the pile and the gas chamber behind the piston is only a damper. The stress pulses to the pile is not created by suddenly increasing the pressure behind the piston 13, since before meeting pile 11, piston 13 is in its foremost position because of the pressure behind it. Thus, increasing the pressure behind piston 13 cannot create the stress pulse to the pile 11 since piston 13 cannot move more forward in relation to the body 10 from its foremost position. Thus, *Ludvigson* fails to disclose the patentable features of independent Claim 1.

For at least the foregoing reasons, it is submitted that the device of independent Claim 1, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.


Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

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